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**United States Patent** [19]**Liu et al.**[11] **Patent Number:** **5,972,409**[45] **Date of Patent:** **Oct. 26, 1999**[54] **SOLUBLE INSTANT COFFEE PREPARED FROM EXTRACT OBTAINED FROM GREEN COFFEE**[75] Inventors: **Richard Tien-Szu Liu**, Worthington, Ohio; **Karl Loehmar**, Korntal, Germany[73] Assignee: **Nestec S.A.**, Vevey, Switzerland[21] Appl. No.: **08/875,836**[22] PCT Filed: **Feb. 6, 1996**[86] PCT No.: **PCT/IB96/00088**§ 371 Date: **Aug. 6, 1997**§ 102(e) Date: **Aug. 6, 1997**[87] PCT Pub. No.: **WO96/24255**PCT Pub. Date: **Aug. 15, 1996**[30] **Foreign Application Priority Data**

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[51] **Int. Cl.<sup>6</sup>** ..... **A23F 5/00; A23B 4/03**[52] **U.S. Cl.** ..... **426/595; 426/432; 426/465; 426/466; 426/473**[58] **Field of Search** ..... **426/594, 595, 426/432, 465, 466, 473**[56] **References Cited****U.S. PATENT DOCUMENTS**

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*Primary Examiner*—Anthony J. Weier*Attorney, Agent, or Firm*—Vogt & O'Donnell, LLP[57] **ABSTRACT**

A soluble coffee is prepared from ground green coffee which is extracted with water, the green extract obtained is dried and green powder obtained by drying is passed into and through a twin-screw extruder, and while the powder is passed through the extruder, the powder is heated in the extruder at a temperature of from 130° C. to 240° C. for up to 5 minutes to obtain a heat-caramelized extrudate product from the extruder, and that product is cooled and thereafter dried and ground to provide a powder-form product. Additionally, obtaining green extracts from low temperature and high temperature split extraction enables separate processing of low and high temperature extracted extracts, and low temperature extracted extracts may be heated in an extruder at a temperature of from 180° C. to 240° C. and high temperature extracted extracts may be heated in an extruder at a temperature of from 130° C. to 180° C. which enables obtaining a balanced product. Further, in the context of use of low and high temperature extraction, an extract may be obtained from roast and ground coffee by low temperature extraction and then the spent grounds and green coffee may be extracted by high temperature extraction, and the extracts may be treated as set forth above.

**26 Claims, 6 Drawing Sheets**